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THE JOURNAL OF THE FLORIDA MEDICAL ASSOCIATION
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INFECTION OF THE NASAL ACCESSORY SINUSES IN CHILDREN

WARREN W. QUILLIAN, M. D.
Coral Gables

During a recent study of private and hospital records[1] it was observed that a large percentage, (approximately 45 per cent of 3,743 cases), of pediatric practice in Florida is concerned with respiratory infections. While the occurrence of complications varies with the type and virulence of the causative organism, the incidence of sinusitis is surprisingly high in this series, being 6 per cent of 560 cases in the original groups of patients seen in office and home. The lower coastal region of Florida, with its subtropical environment, lures many sufferers with chronic or recurrent colds who are seeking relief with the help of our equable climate. Thus, there is found here a concentration of sinus sufferers from all parts of the country during the winter season.

Ebbs[2] examined the sinuses in a consecutive series of 496 autopsies made in children of all ages from birth to fourteen years, who had died from a great variety of medical and surgical conditions. Of the 496 children examined 152 had purulent infection of one or more sinuses. He found that 30.6 per cent of children of all ages who had died in a large hospital for children showed evidence of sinusitis at autopsy.

In a systematic study of autopsy material at the Empress Friedrich Pediatric Clinic of Berlin during 1936 Schönberg[3] discovered that diseases of the sinuses occur frequently in nurslings and that many of these children show marked nutritional disturbances.

PREDISPOSING FACTORS

Predisposition to infections of any portion of the respiratory tract depends upon the balance between the virulence of the infecting organism and the immunologic response of the patient. General hygiene, housing conditions, climate, vitamin deficiencies, endocrine imbalance, allergy and other similar factors play an important role. Any local condition of the mucous membranes which interferes with the normal action of the ciliated epithelium may predispose to infection. The type of organism found varies widely, and depends somewhat upon the bacterial flora encountered by children in their daily contacts.[4] The role of swimming with attendant chilling of the body surface has been emphasized by Taylor[5] as an important predisposing cause of paranasal sinus infection.

SYMPTOMS AND DIAGNOSIS

Recurrent nasal discharge, localized head pains, sore throat, chronic postnasal drip or cough, frequent head colds or nasal obstruction, asthmatic patients with negative skin tests or allergic individuals with extra-seasonal nasal complaints, periodic run-down states—all of these conditions should make the clinician suspect sinusitis. A low grade subfebrile temperature and failure of the child to thrive properly may be the first suggestive clues to a definite pathologic condition of the sinuses.

The history obtained is of considerable importance. Familial tendencies, allergic or endocrine disturbances may play a part in the clinical picture. The character, duration and amount of nasal discharge is helpful information. There is no substitute for a careful physical examination. Edema of the middle turbinates may interfere with adequate ventilation and drainage of the anterior ethmoidal cells, maxillary antra or frontal sinuses in older children. Pus in the region of the midportion of the inferior turbinates may indicate involvement of the maxillary or anterior ethmoids or both. Pus at the posterior portion of the middle turbinates suggests the possibility of infection in the posterior ethmoid or sphenoid cells. Nasal secretions should be examined to determine the character of cells and type of organisms present. In allergic rhinitis there is often a predominance of eosinophils; while an abundance of polymorphonuclear neutrophils usually means infection.[6] Conclusions will be more accurate if based upon microscopic examination of a series of intranasal smears and a correlation of findings.

The chief value of a roentgenologic study is the definite information obtainable concerning the presence, growth and clinical significance

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Read before the Sixty-Seventh Annual Meeting of the Florida Medical Association, held at Tampa, April 29, 30, and May 1, 1940.

of the sinus which is suspected of being diseased. A blurred sinus plus pus in the nares and a suggestive clinical history with cervical adenopathy constitute presumptive evidence of a pathologic condition of the sinus until proved otherwise. But cloudiness of the sinuses in allergic children does not necessarily mean infection. The use of lipiodol or other radiopaque media may materially improve the value and significance of sinus roentgenograms. Technical difficulties render their use in uncooperative or very young children impractical except by a well-trained rhinologist. Transillumination has proved very unsatisfactory and misleading as a diagnostic procedure in children.

COMPLICATIONS

Dushan[10] enables us to visualize better the complications of paranasal sinusitis by classifying them into two groups. The descending group consists of those which involve the respiratory and the gastrointestinal tracts. The ascending group affects the central nervous system. Cerebral complications such as meningitis or abscess occur because of a direct communication between the veins and lymphatics of the nasal mucosa and the dura. Constant postnasal catarrah may cause pharyngitis or infections of the lower respiratory tract, while repeated swallowing of infected secretions from the sinuses may easily cause gastric disturbances or complications in the lower digestive tract.

TREATMENT

Small children and infants cannot remove their own nasopharyngeal secretions. Therefore, the use of suction provides an effective method for prevention of the obstruction which predisposes toward blockage of the natural ostia in an acute exacerbation of a chronic sinusitis or during an attack of acute sinusitis. This procedure also helps in checking an extension of the inflammatory process through the eustachian tubes with development of an otitis media.

Local treatment includes the use of ephedrine solutions in an effort to shrink the turbinates and to open the ostia of the sinuses. Indiscriminate use of harsh or irritating solutions in the nose may result in definite damage to the mucous membranes and serve to perpetuate the disease for the relief of which the medication was intended. Good results demand clinical judgment as well as a full appreciation of the physiology and pathology of the affected parts. The prime requisite is the establishment of adequate ventilation and drainage.

Any treatment of chronic sinusitis must include an adequate program for the relief of malnutrition, fatigue, anemia and associated clinical states due to the presence of the chronic infection in the sinuses. Local therapy will fail unless this fact is appreciated by the physician. Logical treatment lies in the relief from obstruction to the normal ciliary action of the mucosa. If this obstruction is due to allergy, appropriate treatment can be instituted only when complete diagnosis has been made and the offending allergenic factors eliminated. Bony obstruction may require surgical intervention. But, in childhood, prevention is more satisfactory than eradication. Attention to proper nutrition of the growing child, adequate prenatal care and prevention of rachitic deformities in the small child during early years of rapid growth provide an important field for prevention of sinusitis later.[7]

Medicinal therapy is almost entirely symptomatic and consists of antispasmodics, analgesics, alteratives or expectorants. Shea[8] advises the administration of calcium, thyroid and parathyroid in combination as an effort to control the size of hypertrophied lymphoid tissue. Roentgen therapy has been used by McLendon[9] and others for the same purpose with excellent results. Stock antigens or vaccines have been disappointing in my experience, but autogenous vaccines made from the child's nasopharyngeal secretions have often seemed of value in the accomplishment of an improved immunologic response.

The diet should be rich in vitamins and minerals. This is of particular importance to the allergic patient who very often requires rigid dietary restrictions. Change of climate appears to be beneficial in some instances, the important factor being freedom from sudden changes of temperature or excessive rainfall.

SUMMARY

1. Infection of the paranasal accessory sinuses in children is not uncommon.

2. All children with chronic or recurrent colds should have a careful investigation of the sinuses.

3. Diagnosis depends upon intelligent interpretation of information obtained from a

careful history, physical examination, x-ray and bacteriologic studies.

4. Neglected early treatment may predispose toward serious complications with profound effects upon growth and development.

5. Treatment of sinusitis in children demands careful consideration of etiologic factors. Conservative measures give gratifying results.

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DISCUSSION

Dr. D. D. Martin, Tampa:

Doctor Quillian has presented a paper on a subject in which all of us are interested, directly or indirectly. I am sure that we all enjoyed this paper which was presented in a masterly manner by a keen student of childhood diseases.

The more I see of sinus diseases the more firmly I am convinced that aeration and cleansing by suction of the upper respiratory passages is the method of choice in the treatment of sinus infection in children. Irritating drops instilled in the nose have only a dilatory effect. X-ray therapy has been very useful in a number of cases that I have seen but as to whether the effects are lasting we have yet to see. Many of these children have apparently been definitely benefited.

Supportive treatment plays an important part in these cases. We should never start any type of treatment in sinus infection until the definite, distinct type of infection has been determined. We can never expect allergia to respond to treatment that is instituted for a true sinus infection. The climate no doubt plays an imporant part in a large percentage of sinus infections but certainly other supportive measures and appropriate treatment must be used.

I thoroughly agree with Doctor Quillian that aeration and suction in the true type of infection, and finding the offending factor in allergia, seem the proper approach to these cases.

I think we all agree that the duration of sinus disease is shorter in our section of the country than elsewhere and that we see few sinus infections originating in our subtropical environment.

Dr. C. E. Dunaway, Miami:

It is interesting to note the number of cases of sinusitis discovered upon autopsy. Sinusitis in children is often silent and not recognized unless seen by an otolaryngologist. Acute sinusitis is responsible for a large number of cases of bronchosinusitis seen in children. The child is usually examined first by the pediatrician or general practitioner and a history obtained of coryza, cough, fever and the usual manifestations of grippe, which instead of clearing up in a few days with treatment, continues in spite of all treatment rendered. The child may show a few patchy areas of consolidation, yet the underlying condition is silent sinusitis. When this is cleared up the child rapidly returns to normal. If the condition is not eliminated, the child may develop some structural changes such as bronchiectasis. Children may develop sinusitis from infection of the lower respiratory tract from coughing of purulent sputum which is constantly sprayed into the nasopharynx and nose. Lung abscesses are frequently due to sinusitis, as is otitis media, and this condition is not found unless looked for.

In regard to diagnosis of sinusitis, Doctor Quillian has covered this very nicely. My only thought is that an examination of the sinuses by the attending physician or a competent otolaryngologist should never be omitted whenever a child presents symptoms of a cold, disease of the respiratory tract, or otitis media.

A good history from the mother should be obtained. Roentgenologic studies of the sinuses are quite helpful. However, I do feel that roentgenograms alone should not be relied upon. Clinical signs are more important. Roentgenologic reports frequently state that there is no pus in the sinuses but later, upon aspiration, a large amount of pus is removed. Transillumination, correctly done, has some value, in my opinion, although many condemn it. The allergic individual will frequently show the same picture, upon roentgenography, as the patient with sinusitis.

In the way of prophylaxis, we can avoid swimming, as suggested by Taylor. I think every mother should be cautioned of the possibilities of sinus infection and ear diseases if the child is permitted this form of recreation. The child's resistance should be kept at par, if possible. Frequently these children are anemic and I feel that complete blood examinations will often assist us. Any anatomical deformity should be corrected, if possible, if it interferes with aeration and drainage of the sinuses.

The treatment of sinusitis remains the same as of old—aeration and drainage. In my practice I usually shrink the nasal mucous membranes with a very weak solution of ephedrine. Suction is used in each case of purulent sinusitis. The mother is instructed to use a weak solution of ephedrine at home and postural drainage. I do not use adrenalin in young children as many of them are allergic to this drug. Infra-red ray and diathermy are used frequently to relieve pain. Many use x-ray therapy in the treatment of sinusitis with seemingly good results. In acute cases of sinusitis, in my opinion, aspiration should not be used; aspiration is used only after the acute symptoms have subsided. The displacement method of Proetz is very useful in older children .

Dr. R. L. Cline, Lakeland:

Because the conventional idea of allergy is anything but clear Dr. James Adams of Glasgow, Scotland, said until the profession has dispelled this allergic fog there is no hope for it to learn the true nature of allergy.

Allergy is only one of the many symptoms of a syndrome. That syndrome embraces allergy, angioneurotic edema, turgescent rhinitis, urticaria, eczema, sneeze, cough, wheeze, eosinophilia and the like.

The profession speaks of allergy as an etiologic factor of sinus disease, turgescent rhinitis, hay fever, asthma, eczema, urticaria and food sensitizations. The fact is, allergy is only one of the many symptoms of the syndrome which follows a systemic upset, toxicosis from whatever

cause and is often due to endocrine imbalance. In overcoming the endocrine imbalance and the other systemic conditions the allergia together with all the above named symptoms disappear simultaneously.

Allergy does not produce sinus disease; on the contrary, sinus and other systemic diseases produce the allergic condition.

Dr. Wm. E. Quicksall, St. Petersburg:

When an intern in St. Joseph's Hospital, Philadelphia, in 1898-1899, I saw many cases of sinusitis in badly fed, under-privileged children sent to us from the great Will's Eye Hospital, nearby.

These children came to us with profuse acrid nasal discharge, excoriating the upper lip all the way down to the margin of the mucous membrane, with marked blepharitis, and a photophobia so severe as to make it difficult to keep their eyes more than half open.

They were sprayed with a 3 per cent silver nitrate solution, using a hard rubber atomizer throwing a very fine spray, free from drops. It was found that this was of the greatest importance to avoid after pain and irritation. These children did not seem to suffer in the least from silver of this strength, while no adult can stand it without agony for from 12 to 24 hours.

The results were remarkable. It was amazing to see how soon they would come in to the clinic with their eyes wide open, and clear, and the excoriation gone from the upper lip.

Dr. Warren W. Quillian (Concluding):

I wish to thank these gentlemen for their generous discussion.

In connection with Doctor Dunaway's remarks, I regret that time does not permit a demonstration of these slides of Dr. Wasson. They would illustrate his point very clearly. Frequently roentgenologic examinations show very definitely that recurrent respiratory infections and repeated attacks of bronchopneumonia are asscoiated with sinus infections.

May I conclude by summarizing the points that have been emphasized in this paper:

First, that sinusitis is not an uncommon disease in children.

Second, that conservative treatment usually brings relief and that it is not necessary to resort to severe surgical procedures in most instances.

Third, that all children with chronic or recurrent colds should have a careful examination of the sinuses. Diagnosis depends upon intelligent correlation of the information obtained from careful history, physical examination, roentgenologic and bacterial studies.

Fourth, neglected early treatment may predispose toward serious complications with consequent effect upon growth and development.

IMPLANTS FROM LINING OF WOMB

Two women complaining of what they thought was "stomach trouble" were found to have obstructions of the small intestine caused by a growth of an escaped portion of the mucous membrane lining the womb, Paul M. Glenn, M. D., and John J. Thornton, M. D., Cleveland, report in *The Journal of the American Medical Association* for Aug. 17.

The escape of a portion of the mucous membrane lining of the womb from its normal location and its adhesion to and growth on some other organ of the abdomen is known as endometriosis and is not an uncommon condition. Just how this condition arises has not been determined.

OTOLOGIC PROGRESS

M. A. LISCHKOFF, M. D.
Pensacola

The general practitioner is keenly interested in deafness from various etiologic sources, but his personal experience, in non-suppurative cases, is limited. He is the first to see earache and to recognize its extension and need for specialized treatment. He becomes the consultant and sympathetic adviser throughout the mastoid complications. His cooperation in progressive deafness would be greater were he familiar with the progress of otology. That is my reason for presenting the subject of deafness to an audience composed mostly of general practitioners and surgeons.

The treatment of deafness to some of you might mean inflation and oily nasal sprays; others may be familiar with massage and galvanism; but few realize that a grossly normal looking drum membrane may be seen in a variety of types of deafness. The appearance of the tympanic membrane is no guide to hearing acuity; many chronic suppurative otitis media cases with large perforations have little or no hearing impairment.

The magnitude of the subject makes it impossible even to skim its surface in the few minutes allotted, so I shall be content with mentioning a few conditions. According to Crowe[1] there are three common types of impairment of hearing: the type due to a lesion of the conductive apparatus which interferes with the transmission of sound to the cochlea; that due to a lesion in Corti's organ, or the cochlear nerve which interferes with the perception of sound; and a combined conductive and perceptive deafness. It is possible to have impaired hearing due to a nuclear or auditory pathway lesion but this is very rare. To cause deafness a tumor of the brain or other type of central lesion must be extensive enough to involve the auditory pathways on both sides (except in a cerebellopontile angle lesion).

The three conditions in the middle ear that impair hearing are eustachian tube obstruction, lesions that interfere with the movements

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Read before the Escambia County Medical Society, February 13, 1940.

of the ossicles, and fixation of the stapes due to otosclerosis.

In the past we were content to make our diagnosis with the tuning fork. Then came the audiometer and now one would not feel that a test had been complete without both the audiometer and tuning fork. The only way to make a differential diagnosis is to get a detailed history, examine the upper respiratory tract, the tympanic membrane, and eustachian tubes, and use masking when making hearing tests.

Progress in other fields of science are reflected in new conditions being observed such as aviation, which has added new phases to ear diseases. Aero-otitis was recently defined as an acute or chronic traumatic inflammation of the middle ear caused by pressure difference between the air in the tympanic cavity and that of the surrounding atmosphere commonly occurring during changes of altitude in airplane flights and characterized by inflammation, discomfort, pain, tinnitus, and deafness. Lovelace, Mayo and Boothby[3] believe it to be a middle ear condition caused by the lack of ventilation of the middle ear during sudden changes in atmospheric pressure, severe enough to traumatize the tympanic cavity.

Chronic aero-otitis is characterized by partial deafness, fulness of the ears, and head noises. It is aggravated by flying and during acute infections of the upper respiratory tract. On commercial transportation planes, passengers are now warned to ventilate the ears by chewing gum. Armstrong and Heim suggest swallowing, yawning, singing, autoinflation of the eustachian tube and contraction of the salpingopharyngeal muscles as means of preventing aero-otitis, stimulating the parasympathetic.

The treatment of deafness and tinnitus with prostigmin and use of thyroxin are recent popular therapeutic additions to a voluminous armamentarium.

Gray[4] noticed temporary improvement in hearing after sudden changes in ear circulation and he called this phenomena otosclerosis-paradoxica. Associated is the fact that a similar improvement occurs in many cases on the inhalation of amyl nitrate, appearing to indicate some defect in the vasomotor system of the organ of hearing as being the essential factor in the causation of the disease.

As a result of his clinical observations of the effect of the local application of the thyroxin to the mucous membrane of the nose, he was led to try its effect upon the ear in otosclerosis. His method consists of the injection of a fine suspension of thyroxin into the tympanic cavity by means of a hypodermic syringe and a long fine needle. In seven of his fourteen cases, he noted satisfactory improvement. It is only applicable in patients under 40 years of age and of no value after 50. There were no controls in his experiments.

The subsequent report of his associates who followed up his work did not confirm his results. Goldstein[4] seems to think that a specialized technique is necessary and few are familiar with it. Rainisch[5] noted that otosclerotic individuals had increased deafness when under the influence of epinephrine and improvement upon the use of pilocarpine. Mortimer and Wright,[6] while observing the use of estrogenic substance in atrophic rhinitis, found that they could improve hearing in certain cases by the local application and hypodermic injection of this substance. They feel that there may be a hitherto unrecognized "oto-genital" relationship which may play a part in the physiology of hearing.

Davis and Rommel[7] advocate the hypodermic injection of prostigmin methylsulfate. This bids to be one of the few new worthwhile remedies. Many patients are quickly relieved of their tinnitus, and improvement in hearing can be demonstrated audiometrically in most instances. The relief obtained is frequently immediate and lasting. Those with acute conditions usually get well with restoration of hearing after five treatments or even less.

Desjardins reported favorably influencing otosclerosis with roentgen rays. Others think allergy a frequent cause of deafness. There are undoubtedly many cases of allergic sensitivity. The ill effect of drugs and allergy on hearing is again being revived because of the widespread use of "harmless" cold tablets that contain aspirin, quinine, etc. Many patients complain of fulness or tinnitus after taking only one aspirin tablet. Quinine deaf-

ness appears to be more or less permanent, as no remedy has been brought forth to influence the unfavorable prognosis.

Taylor's[8] recent observations on body chilling in water changed the viewpoint on the relation of diving and swimming to sinus and ear disease. It is now believed that ear infection is not in proportion to water contamination. My own investigation showed that otitis media occurred as frequently in waters that had active currents as those that carried higher bacteria count and less current. The reason for fewer ear complications in surf bathing is due to the comparatively little swimming one does in the gulf or ocean.

Although very little has been written about the improvement in hearing after hyperthermia, my own observations make it appear to be temporary. It would seem to be more of a general improvement with increased hearing acuity from a temporary improvement in nutrition due to circulatory stimulation. Local diathermy in the form of reflected heat is a most useful aid to ear circulation.

The physician today is much interested in the testing of hearing in school children. Audiometric examinations have revealed hearing defects in more than five per cent of school children examined. Three million of the fifty million pupils enrolled in the public school systems of the United States have imperfect hearing and four million have demonstrable speech defects. These defects range from slight to serious handicaps. Fourteen per cent is a large percentage of future citizens to grow up with such handicaps. Many repeaters are found to be hard of hearing. It has been brought out that many children with speech defects are deaf, or partially so. Certain stammerers have islands of deafness corresponding to the speech defect.

Many patients suffering from deafness have made the rounds of doctors and specialists, and in spite of good, bad, or indifferent treatment, grow progressively worse. They were willing to have anything done in an effort to hear again, and so the problem has been approached surgically with some success. Holmgreen, Sourdille, Dixon, Campbell, Lempert, and others have devised surgical procedures. All except Dixon attempted to establish fistulas of the semicircular canals and eventually to fill the saccus endolymphaticus. By the latter procedure decompression of the endolymph is obtained with improved hearing.

Newhart and Hartig[9] state:

> Our responsibility to the deaf does not cease after unsuccessful treatment or surgery. Even if operation is not indicated or wanted and previous treatment is of no avail, the otologist must continue to be interested, sympathetic, and helpful.

He should not merely suggest lip reading or mechanical aids, but should be well informed about both, and assist his patient in obtaining the best hearing aid available. It is just as much the otologist's duty to prescribe a correct hearing aid as it is for an ophthalmologist to prescribe correct glasses.

The hearing aid of today is not the old crude carbon microphone full of distortions, but a compact vacuum tube with crystal or condenser microphone that is comparatively free from distortions. It is fitted on information obtained from an audiogram, for both air and bone conduction. From this audiogram, the proper degree of amplification at different frequencies can be prescribed.

Even after the hearing aid has been procured by the patient, the otologist's aid is necessary. Patients don't just wear hearing aids; they have to go through a period of education, learn to hear again and learn how to hear. No other orthopedic appliance is given to a patient without detailed advice through the adjustment period, and the deaf patient is no exception. As a matter of fact, his psychology makes him sensitive about his handicap and frequently he resents being considered deaf. A blind patient will confidently follow a dog through fire, but a deaf patient is suspicious of all our efforts. Few mental cases require more sympathetic cooperation than progressive deafness.

Pinter concluded that in school children those with hearing defects are decidedly more neurotic, more introverted, more submissive. The White House Conference Report on Child Health states:

> Persons deprived of normal hearing tend to become socially maladjusted, to develop more or less serious psychopathic attitudes. They live in a world more or less isolated from that of their fellows.

As we review this interesting subject, may we leave here with the thought that progress in otology cannot be measured by the amount of hearing improvement obtained in the av-

erage treatment even in the most skilled hands.

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404 Blount Bldg.

WATER METABOLISM

EDWIN P. PRESTON, M. D.
Miami Beach

Water is by far the largest single constituent of the body. When the total amount of it is altered, either by adding or withdrawing fluid through the blood stream, all tissues are not equally affected.

Skelton showed that in animals having no fluid for thirty-two hours the skin was the most important source of fluid for the blood. The next source was muscle tissue. In normal animals injections of hypotonic sodium chloride is absorbed by muscle and liver. In hypertonic sodium chloride the solution goes mainly to the skin. After very severe hemorrhage the blood becomes more watery at the expense of both muscle and skin. The conclusion from this work is that the water content of the blood is maintained at the expense of the fluid content of muscle and skin.

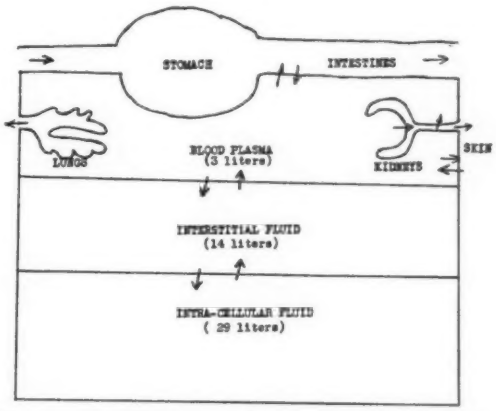
To serve as a fluid reservoir an organ must contain a large amount of loose connective tissue. The skin and muscles each contain a large amount and in addition contain large intercellular spaces. You have just heard how they take in and give up water. Parenchymatous organs show no appreciable loss of water even in severe dehydration. This leads to the conclusion that the intercellular spaces act as a reservoir for sustaining blood plasma volume. The very constancy of blood plasma volume, despite great variations in intake and output presupposes the existence of some storage place for excess and supply as needed.

Approaching the problem from this angle we consider the body water as divided into three fluid compartments: first, the vascular system, through which fluid is being rapidly circulated under pressure maintained by the action of the heart; second, the intracellular fluid in which living processes occur; and lastly, separating these two is the intercellular or interstitial fluid which surrounds the cells and constitutes the internal environment of the organism.

Since fluid passes in and out of the body only through the plasma compartment, the interstitial and intracellular compartments depend entirely upon the plasma for their supply.

If the interstitial fluid is to change in content and volume as need occurs then there must of necessity be effective communication between blood and tissue fluid. This exchange occurs through the endothelial membrane of the capillaries. There must be effective communication between the fluid bathing the cell and the cell itself. This occurs through the cell membrane.

TABLE No. 1



Diagrammatic illustration of the three fluid compartments. (Modified from Gamble; Bull. Johns Hopkins Hosp. **61**: 151, 1937).

Read before the Staff of St. Francis Hospital on August 14, 1939.

COMPOSITION OF COMPARTMENTS

Except for the difference in protein content the plasma and interstitial fluids are practically identical. The barrier between these compartments (the endothelial wall) is therefore permeable to all except protein which causes a slightly higher chloride and lower sodium concentration in the interstitial fluid. Sodium is the important base in these two.

The barrier between interstitial and intracellular compartments (the cell membrane) is very different. It is endowed with a high degree of selective impermeability. Here potassium is the predominant base. Chemically then it differs greatly from the other compartments. In spite of this the total ionic concentration is the same for all three compartments. This must be so since water moves freely across the intervening barriers. If the base concentration is not constant a rapid shift of water occurs to combat it. This is without regard to cell health. If intracellular base is more concentrated then extracellular base fluid flows through the cell membrane until equilibrium is maintained, even if the cell bursts. If the concentrations are reversed fluid flows out of the cell into base fluid, even if it is crenated in doing so.

TABLE No. 2

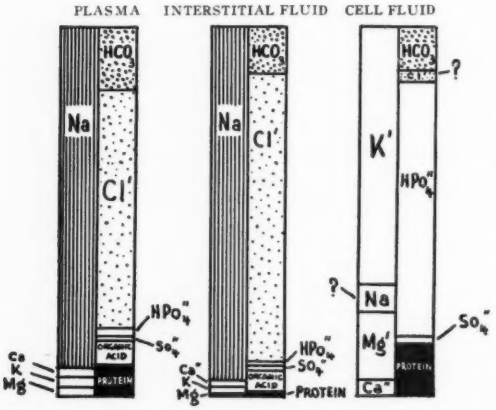


Diagram showing the chief chemical constituents of the three fluid compartments. The height of the left half of each column indicates the total concentration of cations; that of right half, the concentration anions. (Modified from Gamble; Bull. Johns Hopkins Hosp. 61: 151, 1937).

VOLUME OF THE COMPARTMENTS

The vascular is the smallest but the most important of the three. It links internal and external environments; the sole channel of exchange for all substances reaching and leaving the cells. To do this effectively the plasma must maintain its volume as well as its composition. The volume through its effect on capillary pressure determines the direction of fluid exchange between plasma and tissue fluid. The persistence of constant volume of plasma indicates that any change of volume sets in operation the mechanism for its regulation. The average volume is 45 cc. per kilogram. An average man would have about three thousand cubic centimeters.

The interstitial fluid volume is roughly 20 per cent of the body weight; it would equal 14 liters. Intracellular compartment volume is roughly 29 liters for the same man.

Water balance then presents two aspects: (1) exchange between plasma and outside; (2) exchange between plasma and inside.

EXCHANGE BETWEEN PLASMA AND OUTSIDE

INTAKE

Fluid taken by mouth is absorbed from the lumen of the gut. This is preceded by the establishment of osmotic equilibrium between fluid and blood. The rate of absorption depends on the concentration of the ingested fluid. Hypertonic solutions retard absorption by initial diffusion of water from the blood. The rate of absorption also depends on the diffusibility of the dissolved substances.

Large quantities of fluid are then secreted into mouth, stomach, and intestine in course of digestion. This is reabsorbed as digestion proceeds. This amount is between 3 and 10 liters daily. It is larger than the plasma volume (3 liters). Visualize then the effect of continued loss of digestive secretions occurring in persistent vomiting or diarrhea.

REGULATION OF WATER INTAKE

The fluid intake varies widely. The average is between 2,200 and 4,500 cc. In India 13 liters per day is often taken. The sensation of thirst indicates the need for increasing the water content and as such has great practical significance.

Concurrent changes in salivary flow and plasma volume may be seen after water deprivation, after ingestion of a large meal taken without water, after profuse sweating, etc. correlation in these and other experiments indicate the dependence of thirst upon a re-

duction in the fluid volume of the blood. It is especially well illustrated in hemorrhage. A patient was bled 500 cc. in five minutes. There was a small temporary fall in blood pressure indicating an effective compensatory vasoconstrictor mechanism, but the salivary flow immediately fell to one-fifth of its previous level and did not return for one hour (presumably the time required for restoration of fluid volume of the blood.) The conclusion then is that the decrease in plasma volume is significant in the mechanism of thirst which signals the need for an increase in water intake.

A dry mouth, then, is an important physical sign of a lowered blood volume. A patient with a dry mouth is a poor surgical risk and cannot withstand hemorrhage as well as a patient whose tongue is moist and glistening.

DEHYDRATION

This is frequently an important clinical problem. In diarrheas large quantities of water are lost. Vomiting also depletes the supply rapidly.

Some tissues depend more than others on their water supply. Muscle and skin can lose a very large proportion without permanent damage to themselves or the organism. This is not true for the blood. Dehydration causes an increase in viscosity in the blood. Circulation through the tissues is impaired and the blood tends to stagnate in the capillaries; in extreme dehydration the blood may become so viscous that there is no bleeding from deep cuts.

ELIMINATION OF FLUID

Water loss through the kidneys is dependent on many factors,—chiefly the available supply. In the tropics it may be reduced to a minimum in which the greater part of 10 to 12 liters of water drunk daily is lost through the skin. Here also a considerable amount of sodium chloride is excreted by the sweat glands, thus reducing the water volume required by the kidney for excretion of salt.

As water intake is normally in excess of bodily needs the kidneys usually function as a spillway for water not dissipated through extra-renal channels. If the supply is meager it excretes salts and waste products in high concentration. It is now thought that its output is adjusted to the loss through other channels by the pituitary gland. A damaged kidney is often unable to restrain albumin loss and fails in ability to concentrate. This results in a loss of body water to carry out solute. The loss through the feces is negligible except in diarrheas. Loss through the skin is partly insensible cutaneous loss and partly visible secretion of sweat. The insensible cutaneous loss and respiratory loss go on continuously and at a fairly constant rate.

WATER INTOXICATION

Ingestion of large quantities of water causes no harmful effects if the kidney is normal. With impaired renal function it may cause headache, dizziness, vomiting and cramps, increase in weight, and an increase in blood pressure. This is termed water intoxication. It can be readily produced by giving water with injections of posterior pituitary extract. This inhibits the excretion of water, but does not interfere with its absorption from the alimentary tract thus causing the system to be overloaded with water. If it is continued death ensues. Hypertonic salt solution or urea counteracts this effect. These symptoms are caused by a dilution of body fluids with respect to salts. Heat cramps are similar. Men exposed to extremes of heat lose large quantities of salt in the sweat. If the water content is restored only with water the concentration of salt in the body fluids decreases so that normal functions are disturbed.

The dependence of the total water content of the body upon the retention of salts may be illustrated in a number of ways. Dehydration accompanying pyloric obstruction cannot be relieved by water alone. With the continued secretion of gastric juice considerable quantities of chloride and some sodium are lost. The preponderance of base left in the blood is excreted by the kidneys with the result that both the sodium and chloride in the extracellular fluid is rapidly depleted. Water has no therapeutic value here and is merely excreted.

Another illustration is the gradual loss of body fluid occurring in individuals living on salt-free diets. We all know that patients with impaired renal function for excretion of salt will get retention of fluid if salt is given; and further that removal of edema fluid is really a problem of bringing about the excretion of sodium chloride. Storage of water goes hand

in hand with storage of salt, one cannot be retained without the other. Hence, either one alone acts as a diuretic.

INFLUENCE OF CENTRAL NERVOUS SYSTEM AND HORMONES

1. Puncture of the floor of the fourth ventricle we know causes polyuria.

2. The common association of diuresis with nervous excitement is another illustration.

The adrenal cortex seems to be concerned with regulating and maintaining the normal distribution between intracellular and extracellular fluids. The premenstrual edema of women is another indication of the complex relations between water balance and interior secretions.

EXCHANGE BETWEEN PLASMA AND INSIDE

Translocations of water in the organism can be explained by known physical and chemical forces only to a certain extent. Very often the living membrane participates actively in fluid exchange, causing water and solutes to move in opposite directions to the concentration gradient. Otherwise fluid movement is determined by osmotic and hydrostatic pressure.

Osmotic pressure is the result of an unequal concentration of fluid on two sides of a membrane. If an aqueous solution of sucrose is separated from water by a membrane permeable to water, but not to sucrose the water will move into the sucrose solution until it attains infinite dilution. By raising the hydrostatic pressure of the sucrose solution a point can be reached where the water molecules move out of the solution as fast as they enter it. This rise in hydrostatic pressure equals the osmotic pressure and is a measure of it. It is not due to any peculiar attraction of sugar molecules for water, but simply to the fact that their presence lowers the concentration of the solution as compared with the water outside. Hence water moves in until the diffusion pressure is the same on both sides. This diffusion pressure or direction of flow then is dependent on concentration and on hydrostatic pressure.

In the body the effective osmotic pressure is due almost solely to the plasma proteins because the endothelial wall of the capillary is practically impermeable to them. It tends to draw fluid inside the capillary. This continuous osmotic pressure is balanced greatly by the hydrostatic pressure in the capillaries. It tends to push the fluid out of the capillary. Thus the two forces tend to balance each other.

Increase in venous pressure causes an increase in capillary pressure with transudation of fluid out of the capillary. Decrease the venous pressure and absorption occurs.

This is illustrated by standing. The increase in venous pressure in the lower extremities results in transudation of fluid from the capillary to the tissue as shown by an increase in plasma concentration and an increase in volume of the legs. In about thirty minutes there is no further change because the tissue fluid pressure has risen to a point where it counterbalances capillary pressure. On reclining the venous pressure falls and fluid returns to the circulation.

Great changes in the fluid movement then can be achieved by changes in capillary pressure or permeability. Injury either chemical or mechanical increases permeability so that fluid and protein escape into the tissue. A burn will illustrate this. Since the vasomotor system controls this, it is the prime factor in determining local and general movement of fluid between blood and tissues. Through its integrative action it permits transudation in one part and absorption in another without any changes in plasma volume.

LYMPHATICS

There is another important drainage channel for interstitial fluid. It is the lymph channels. It is the only channel for protein that appears in tissue spaces as a result of cell metabolism. These lymph channels are a closed set of tubules collecting fluid and water from the extracellular spaces and transporting them directly to the blood stream. They are an important factor in removing interstitial fluid and cell waste.

THE INTRACELLULAR FLUID

Diffusion through the cell membrane is free to water and to nutritive products, but is impermeable to potassium, sodium and other cations. The potassium concentration within the cell is the same as the sodium concentration

that bathes the cell in the interstitial fluid. The hydrogen ion concentration is maintained throughout both. The cells themselves are not capable of much distention so that extra potassium ingested is passed in the urine. Excess sodium base outside the cell has plenty of expanding space available so water is derived from surrounding tissues to dilute the base until the right concentration is reached. Retention of sodium thus is possible only with adequate retention of water. If some local factor prevents the sodium chloride and the water from reaching the kidney, edema results. Edema then is the accumulation of sodium chloride solution in the interstitial compartment.

When we once understand the underlying physiological processes involved in water metabolism the pathogenesis of edema becomes much more simple. Its appearance indicates pathology involving one or more of the following: capillary pressure, osmotic pressure, capillary permeability or decreased lymphatic drainage. This is greatly clarified by referring to the following table.

PATHOGENESIS OF EDEMA

(After Landis)

1. Increased capillary blood pressure.
   (a) Congestive heart failure.
   (b) Thrombophlebitis.
   (c) External pressure on veins.
   (d) Heat.
   (e) Dependency.
   (f) Vasodilatation (hemiplegia, trophedema).
2. Decreased plasma colloid osmotic pressure.
   (a) Loss of Albumin.
      (1) Urine.
      (2) Ascites.
   (b) Inadequate protein intake.
      (1) Dietary restriction.
      (2) Impaired absorption (vomiting, diarrhea, mucosal edema, etc.)
   (c) Impaired synthesis of plasma protein.
      (1) Infection.
      (2) Anemia.
      (3) Cachexia.
      (4) Hepatic malfunction.
      (5) Nephritis.
      (6) Pregnancy.
   (d) Sudden plasma dilution.
      (1) Following sudden recovery from dehydration (diabetic coma, diarrhea in children, etc.)
      (2) Following acute massive hemorrhage.
3. Increased capillary permeability (allowing passage of protein and diminishing effective colloid osmotic pressure).
   (a) Inflammation (infection, burns, etc.)
   (b) Acute glomerulonephritis.
   (c) Anemia (anoxemia).
   (d) Congestive heart failure (anoxemia).
4. Decreased lymphatic drainage.
   (a) Lymphedema.
   (b) Increased venous blood pressure (congestive heart failure).

SUMMARY

1. Water of the body may be considered as occupying three compartments.
2. Hydrogen ion concentration is maintained at the same level in all of them.
3. Interference with this concentration causes marked symptoms.
4. Free communication of compartments is maintained by capillary wall and cell membrane.
5. Osmotic pressure and hydrostatic pressure controls the flow of fluid between the first two compartments.
6. Vital processes or living membranes control that between the latter two.

CONCLUSION

Water metabolism is a complex mechanism. The most outstanding sign of any derangement of this mechanism is edema.

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ISOLATED MYOCARDITIS

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Isolated myocarditis was first described by Fiedler[1] in 1890. The disease is characterized by myocardial insufficiency of relatively rapid course in which none of the recognized etiological factors of heart disease are present. No cause is known. The pathologic changes are limited to the myocardium. The pericardium, endocardium and valves are spared. There is an infiltration of the interstitial spaces of the myocardium with lymphocytes, and polymorphonuclear leukocytes, especially of the eosinophilic type. Scott and Saphir[2] found 36 cases of isolated myocarditis in the foreign literature of which they reported 30,

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and added two cases of their own, the first to be reported in the American literature. A more detailed report of the pathogenesis of isolated myocarditis can be found in this paper. De La Chapelle and Graef[3] added a case of their own in 1931. A search of the Cumulative Index since 1931 reveals several other reported cases, the last of which is by Helvig and Wilhelmy. Their article summarizes the literature to date and brings the total reported cases to 53.[4, 5, 6, 7] To these may be added one from Lakeside Hospital, Cleveland, a negress, aged 25, with a diagnosis of acute isolated myocarditis made by autopsy at the Institute of Pathology, Western Reserve University.

All of these patients have died. Rarely is the diagnosis made antemortem, the diagnosis being a pathological one. The purpose of this paper is to report a case of isolated myocarditis, if such a diagnosis can be made clinically, diagnosed antemortem.

CASE REPORT

A. W., a 31-year old, white married male, was admitted to Lakeside Hospital, Cleveland, on September 10, 1934. He had been employed as an automobile mechanic for two years before the onset of his illness without loss of work because of ill health. At the age of seventeen he had taken part in amateur bicycle races and for a few years before admission had been a skating enthusiast. He had never had scarlet fever, rheumatic fever, or syphilis. He had never had diphtheria though, until eight years before admission, he had frequently had sore throat which ceased after tonsillectomy. Four years before entering the hospital he had gonorrhea with epididymitis. The family and marital histories were irrelevant. For the year preceding admission he had been drinking from 150-200 cc. of whiskey a day, with more over the week-ends.

Present Illness: About one month before admission to the hospital the patient began to notice shortness of breath on exertion and a sense of fulness in the chest and abdomen. Shortly after this he would awaken at night and find himself short of breath with a bandlike sensation of tightness across his abdomen. After one week he consulted a physician who had roentgenograms taken which showed "a large heart and pleurisy on the right." (From later x-rays at this hospital the pleurisy must have referred to fluid). The patient continued to work until ten days before admission when increasing dyspnea on exertion prevented further work. Orthopnea at night interferred with sleep and he became very weak. Three weeks before admission he began to have edema of the ankles which increased. He never complained of precordial pain or palpitation.

Physical Examination: A well developed and well nourished white male was lying quietly in bed, slightly orthopneic. Eyes: pupils equal and regular, reacting to light and in accommodation. Fundi were normal except for slight engorgement of the veins. Neck: slight engorgement of the neck veins. Lungs: left costal margin stationary on respiration. Small amount of fluid at the right base; coarse, moist rales at both bases. Heart: slight precordial activity. Left border of cardiac dulness 12.5 cm. from the midsternal line in the fifth interspace. There was no supracardiac dulness. Right border of cardiac dulness 3.0 cm. from the midsternal line in the fourth interspace. Heart sounds of good quality; rate 100, rhythm normal; faint systolic murmur at the apex; blood pressure 125/88. Abdomen: the liver edge was at the level of the umbilicus on the right; liver was tender to palpation. There was no fluid. Genitalia: there was no penile scar. Extremities: there was marked pitting edema of feet, ankles and legs; slight sacral edema. Reflexes were physiologic.

Laboratory Findings: The urine was normal. The white blood count on admission was 10,500. For the first 47 hospital days the white blood count averaged 10,000 and from that point there was a gradual fall to 7,000 at discharge. The red blood count was 5,460,000; hemoglobin (Sahli) 102 per cent; blood Wassermann and microscopic precipitation tests negative on two occasions. Blood urea nitrogen was 16.1 mg. per 100 cc. Sedimentation time: the maximum rate of fall was 0.15 mm. per minute. Basal metabolic rates on the first, second, sixteenth and twenty-eighth hospital days were +24, +25, +7, and normal, respectively. Electrocardiograms showed a low voltage and evidence of myocardial damage. Fluoroscopic examination of the heart showed it to be greatly enlarged both to the right and to the left. It was bag-shaped, with minimal pulsations. There was no change in the configuration of the silhouette with the patient in the upright or recumbent position, showing that pericardial effusion was not present. Two meter chest x-ray plates on the third hospital day showed a transverse diameter of the heart of 19.6 cm., while the transverse diameter of the chest was 33.0 cm. This plate showed no pleural fluid at either base.

The presence of a persistent slightly elevated white blood count indicates the presence of a low grade inflammatory process somewhere in the body,—in this patient probably in the heart. A sedimentation rate as reported is normal. The elevated basal metabolic rates on the first and second hospital days are explained by the elevated basal metabolic rates due to cardiac decompensation, and the rapid return to normal further substantiates this. A transverse diameter of the heart exceeding one-half the transverse diameter of the thorax denotes enlargement.

Hospital Course: On admission, the patient's temperature was 37.5 C., pulse 124, and respiration 24. The heart rate fell to 100 during the first three hospital days. Digitalis was administered rapidly and the weight fell from 72.1 Kg. to 64.4 Kg. in one week coincident with a good diuresis and the loss of the edema. By the twentieth hospital day the pulse rate had dropped to 80 and remained there. He was kept at absolute bed rest for one month and then was allowed up gradually. It was noted then that marked pulsus alternans was present. The appearance of pulsus alternans was not reflected in any change in the electrocardiographic records. He was again given bed rest for two months during which time pulsus alternans persisted. At the end of this two months' period pulse and blood pressure showed a normal response to mild exercise. He was then allowed up gradually and progressively with no ill effect except the persistence of the alternation of the pulse. A two meter chest plate on the 116th hospital day, two days before discharge, showed a transverse diameter of the heart of 14.4 cm. and a transverse diameter of the thorax of 32.0 cm. The heart viewed through the fluoroscope showed normal, vigorous contractions. The electrocardiogram taken the day of discharge showed a normal voltage, but still evidence of myocardial damage.

Follow-up Notes: The patient was kept on a maintenance dose of digitalis throughout his hospital stay. This was continued for one week after discharge and then all medication was stopped. He did odd jobs which required no physical exertion with no difficulty. He noticed that when he became excited and his heart rate would accelerate the pulse would alternate. This caused no discomfort. He discontinued the use of alcohol except for an occasional glass of beer.

On August 19, 1935, the patient was admitted to Lakeside Hospital again. For three weeks before admission he had become short of breath with mild orthopnea.

Diagnostic procedures and course of disease were similar to those of his first admission, and he was discharged October 2, 1935, improved to the same point as at the original discharge.

He was continued on a maintenance dose of digitalis and restricted activity until June 1, 1936, when he was again admitted with a three weeks' history of beginning decompensation. He continued in the course of decompensation with no relief from therapy and died June 20, 1936, following terminal episodes characterized by pulmonary infarctions.

Pathological Examination: The pathological diagnosis was cardiac hypertrophy and dilatation, organizing endocarditis with polypoid mural thrombi (terminal), and multiple pulmonary infarcts. The significant pathological change was found in the heart, microscopically. Grossly, only a large heart with no significant findings was found.

All the sections showed obvious hypertrophy of the muscle bundles, which were separated by moderate amounts of pale, pink-staining intercellular substance, probably collagen. There was also a diffuse exudation of various types of round cells, which usually formed small foci of a few to a dozen cells. Lymphocytes, plasma cells, and mononuclear cells were seen. In the neighborhood of such cellular foci there was often a slight degree of fibrosis. These changes are interpreted as representing a mild, but definite, myocarditis.

DISCUSSION

This case is presented as one of isolated, or Fiedler's, or interstitial myocarditis because it conforms as to history and physical findings with those previously reported, and because no etiological agent could be found for the myocardial insufficiency. There was no history of rheumatic infection, the sedimentation rate was normal, there was no anemia and no evidence of valvular disease clinically or roentgenologically. Thyrotoxicosis was not a factor as the patient had never displayed the symptoms of this disease, such as tachycardia, nervousness, tremor, loss of weight, etc. The patient gave no history of syphilis, and the Wassermann reaction was negative. There was no evidence of vascular disease of either the small or large vessels and no evidence of systemic infection of any sort severe enough to account for heart disease secondary to it. Primary myocardial insufficiency from the use of whiskey over long periods of time does not occur. Paul White[8] says, "Alcohol in strong concentration can without doubt injure the myocardium, but to a less extent than the liver; in small or moderate amounts it probably has little or no effect." An adequate dietary precluded a diagnosis of beriberi heart. His course over three admissions gave no indication of myocardial infarction, either clinically or electrocardiographically. The patient had not had influenza prior to the onset of the disease and there was no reason to suspect that he suffered from diphtheria.

Previous writers on the subject of isolated myocarditis have stated, in retrospect, that the diagnosis of this condition must be made by exclusion. After an adequate period of observation and exhaustion of all clinical and laboratory aids a diagnosis of isolated myocarditis was left, which seemed consistent.

Pathologically, the microscopic picture does not conform exactly to the recognized picture of acute isolated myocarditis. The changes are chronic and minimal. However, it is felt that the patient died from cardiac decompensation due to an inadequate myocardium, rendered inadequate by acute isolated myocarditis two years previously. The pathological picture supports this contention, and as clinically the patient presented the history and course of isolated myocarditis justification was felt in calling this a case of isolated (Fiedler's) myocarditis, diagnosed before death.

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SYPHILIS TRANSMITTED BY KISSING

Syphilis was transmitted to five of eleven members of a family by means of kissing, Gradie R. Rowntree, M. D., and James Robert Hendon, M. D., Louisville, Ky., report in *The Journal of the American Medical Association* for July 13. The original familial infection was from an outside source—through kissing.

The authors state that physicians should be more suspicious of all lesions which might possibly be syphilitic. Two of their patients, they say, had previously been to physicians who made a diagnosis of lip impetigo in one and trench mouth in the other. Only good fortune saved the entire family from acquiring the disease, as they were all affectionate people.

INGUINAL HERNIA

AN ANALYSIS OF 204 OPERATIONS

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This report is an analysis of 204 consecutive operations for inguinal hernia which I performed at the Henry Ford Hospital in Detroit, Michigan, from 1934 to 1937, inclusive.

Of the 204 patients operated upon 49 per cent have been adequately traced from two to four years. This is about the usual follow-up average where the majority of patients are drawn from a large industrial population such as Detroit. Those patients who responded to the follow-up system were carefully examined periodically by different members of the general surgical staff, and not by the operator alone.

Although no definite time limit can be laid down beyond which a recurrence may take place, I feel that any follow-up study which is to reveal worthwhile facts should extend over a period of two years or more. This premise is particularly well borne out in the report by Fallis[1] of the Henry Ford Hospital who, in 1936, reported a series of 1,600 consecutive operations for inguinal hernia. His study revealed that while one-half of the recurrences were observed within one year of operation, one-third were noted more than six years after operation.

GENERAL STATISTICS

Sex. Inguinal hernia in the male totaled 202 cases and in the female 2 cases, or 0.9 per cent *(Table 1)*. In several large series of inguinal hernia that have been reported, the percentage of this type of hernia in females ranges from 1.0 per cent to 5.0 per cent. This relative infrequency of inguinal hernia in the female is probably the result of reduced occupational hazards as well as anatomical differences.

TABLE I

SEX

	Number of Patients	Percentage
Female	2	0.9%
Male	202	99.1%

Obesity. Obesity is generally regarded as a predisposing factor in the development of inguinal hernia. In this series of 204 operations, 47 patients, or 23 per cent, were recorded as moderately or markedly obese. The presence of excess fat in structures of the inguinal region is probably a greater factor in the production of recurrent inguinal hernia than in the development of the primary hernia. Also, it is certainly true, as Fallis[1] points out, that the presence of excess fat not only renders the operation technically more difficult but lengthens the operating time and increases the risk of infection.

Occupation. The occupation is an important factor in the etiology of hernia. In this group I found that 167, or 81 per cent, of the patients were recorded as engaging in hard to moderately hard labor. *(Table II)*. The remaining 19 per cent pursued a sedentary type of work.

TABLE II

OCCUPATION

	Number of Patients	Percentage
Hard labor	167	81%
Sedentary	37	19%

Trauma. The factor of trauma in the form of sudden strain is often regarded as one of the chief exciting causes of hernia. The exact role which this factor plays is an interesting but difficult thing to evaluate. The great mass of social legislation in recent years and the adoption of workmen's compensation laws in nearly all countries have made the subject of traumatic hernia one of vital importance. A history of injury was obtained in 136, 66 per cent, of the cases. It is now almost universally recognized that the most important cause of oblique inguinal hernia is the presence of a preformed sac of peritoneum known as the processus vaginalis. I subscribe to this view because a potential indirect sac can always be found at the internal ring if a careful search is made.

TABLE III

DURATION OF HERNIA BEFORE OPERATION

	Number of Patients	Percentage
One year or less	126	61.7%
One to two years	15	7.3%
Two to three years	8	3.9%
Three to four years	5	2.4%
Four to five years	4	1.9%
Five to ten years	22	10.0%
Ten to thirty years	4	1.9%
Unknown	20	

The duration of hernia before operation is of some interest. In Table III it will be noted

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that 61.7 per cent of the patients had had hernia one year or less before coming to operation. Over 77 per cent were operated on within five years of the development of the hernia. These figures indicate the trend toward early operation. Since the majority of these cases are drawn from a large industrial population there are probably two reasons to account for this. As previously pointed out, most of these persons are engaged in work which entails moderate to heavy labor. Therefore the appearance of a hernia is attended with sufficient discomfort so that they soon report it and have it repaired within a reasonably short time. A good many other herniae are probably discovered in the course of the physical examination required before employment. These people are, of course, refused employment until their herniae have been repaired.

Truss. Thirty-seven, or 19 per cent, of the patients gave a history of wearing a truss before operation. This was an interesting point because there are some who contend that the wearing of a truss causes a pressure atrophy of the tissues in the inguinal region and this renders the repair less satisfactory. An analysis of these cases fails to bring forth any evidence to substantiate that view.

Strangulation. There were only 2 cases, or 0.9 per cent, of strangulated herniae in the entire group. Neither of these cases required intestinal resection. In the earlier reviews this was a rather frequent surgical emergency. The present relative infrequency of this dreaded complication is regarded as a good index to the surgical progress of today.

Anesthetic. Spinal anesthesia was used in 165, 80 per cent, of the cases (*Table IV*). In this group it was necessary to supplement the spinal anesthetic with ethylene and ether in 25, or 12 per cent, of the cases. General anesthesia consisting of ethylene and ether was used in 37, 18 per cent, of the cases. Spinal anesthesia is the preferable anesthetic but was not used in this small group either because the patient refused it or because there was some contraindication to its use. In 3, 1.2 per cent, of the total operations local anesthesia with novocain was used. I have no dislike for local anesthesia but reserve its use for those cases in which spinal or general anesthesia is contraindicated.

TABLE IV

ANESTHETIC

	Number of Operations	Percentage
Spinal	165	80.8%
Ethylene and Ether	36	18.0%
Local	3	1.2%

Side of Hernia. It is generally stated that the right side is slightly more often affected than the left, in the ratio of 3 right to 2 left. In this series the right side was affected in 109 instances and the left in 95, a ratio of 5 right to 4 left. Bilateral herniae were found in 69 cases and comprised 33 per cent of the total number of operations.

Type of Hernia. Direct herniae constituted 73, 35.8 per cent, of the 204 operations under consideration (*Table V*). This figure also included 3 herniae of the saddle-bag type which I feel should be classed with this group. To date there have been three known recurrences among 43 operative cases of direct hernia which have been traced, thus giving a recurrence rate of 6.9 per cent. The youngest patient was 22 years of age and the oldest 60 years.

The indirect type of hernia was present in 131, 64.2 per cent, of the cases. The youngest patient was 5 years of age and the oldest 59 years; the average age for this type was 36 years. Two cases of oblique hernia were in females. There were three recurrences in 58 traced cases of this group giving a recurrence rate of 5.1 per cent.

TABLE V

TYPE OF HERNIA

	Total Number		
Direct	73		
Indirect	131		
Total	204		
	Traced Herniae	**Recurrent**	**Percentage**
Direct	43	3	6.9%
Indirect	58	3	5.1%

Type of Operation. The two classic operations of Bassini and Halsted were employed in the repair of these herniae. The Halsted[3] technic as followed in the Henry Ford Hospital is that described by Halsted in his later articles. It is very similar to the non-transplantation method of Ferguson,[8] in which the conjoined muscles are sutured to Poupart's ligament in front of the cord. The Halsted technique was employed in 76.3 per cent of the cases of indirect herniae (*Table VI*). Twelve oblique

herniae, 9.2 per cent, were repaired by the Bassini[4] method. The remaining 19, 14.5 per cent, were repaired by the modified Bassini or original Halsted[5] technic by transplanting the cord external to the external oblique aponeurosis. In the direct herniae the Halsted procedure was used only in one instance. The modified Bassini technique was utilized in the repair of 46, 63 per cent, of the cases while the remaining 26, 35.6 per cent, were repaired by the Bassini method. I feel that in young people with indirect herniae the Halsted operation is the procedure of choice. The high ligation of the sac with utilization of the cremaster muscle and fascia and imbrication of the external oblique aponeurosis are the main essentials of the Halsted operation. This method thus serves to give the best possible support at the internal ring which is the main weak point in indirect herniae. In direct herniae the principal point of weakness is Hesselbach's triangle. The Halsted method of repair is not satisfactory for this type of hernia because the emergence of the cord at the external ring, just lateral to the pubic spine, weakens the repair in the most vital area. The Bassini technic, however, provides the maximum support necessary in the repair of direct herniae. Its chief weakness lies in dealing with the internal ring where most of the recurrences occur after the repair of direct herniae by this method.

TABLE VI

TYPE OF OPERATION

Type	Operations Traced	Operation		Recurrences	Percentage
		Halsted	100		
Indirect	58	Bassini	12	3	5.1%
		Modified Bassini	19		
		Halsted	1		
Direct	43	Bassini	26	3	6.9%
		Modified Bassini	46		
Total	101		204	6	Av. 5.9%

In the repair of all direct and indirect herniae it is my practice to pick up and incise the potential indirect sac just mesial to the cord as advocated by Hoguet.[6] I then insert my forefinger and apply pressure against the internal surface of Hesselbach's triangle. It is then an easy matter to determine by palpation whether there is a defect or a general weakness of the structures under consideration. If either one or both conditions are found, the Bassini operation is selected as the one of choice. In those cases in which there is just a general weakness of the structures in Hesselbach's triangle it is essential to plicate the transversalis fascia to take up the slack.[1] This is done after pulling up the excess peritoneum at the internal ring and closing the mouth of the sac from within by means of a purse-string suture of fine silk. If there is a defect in the transversalis fascia with a direct sac projecting through it, the latter is converted into an indirect sac by pulling up the excess peritoneum through the internal ring. The mouth of the sac is then closed with a purse-string suture and the defect in the fascia repaired before proceeding with the remainder of the Bassini repair. If the transversalis fascia is thinned out and difficult to repair satisfactorily, I believe that the modified Bassini or original Halsted method, where the cord is transplanted external to the external oblique aponeurosis, is the method of choice, since it gives the maximum of support. This method of repair was employed in 63 per cent of the cases of direct herniae.

It is my custom to use silk as the suture material in practically all hernioplasties. The exceptions to this rule are largely limited to those in whom there is some question as to the condition of the skin. It would be an ideal suture material if it were not for the problem of wound infection. When this complication presents itself there is a delayed period of healing and draining sinuses persist until the infected sutures have been discharged or removed. This complication was encountered in 4.4 per cent of the cases in this series.

Associated operations. In the 204 operative cases there were twelve associated operations. Six of these were bottle operations for hydrocele. In another two the hydrocele was completely excised. The appendix was removed in four cases through the hernial incision at the internal ring. In one case a circumcision was performed. Additional surgery in connection with hernioplasties should be discouraged because of the increased incidence of wound infection and other complications as pointed out by Fallis.[1]

Postoperative complications. As will be noted in Table VII, 26, 12 per cent, of the total number of operations were complicated by one or more of eight conditions. Pulmonary embolism occurred in 2 cases with 1 death, a mortality rate of 0.49 per cent. Phlebitis was

present in 3 cases, or in 1.4 per cent of the total number of operations. This is not infrequently a very disabling condition because of the destruction of the deep venous circulation. The greatest danger from this complication, however, lies in fatal pulmonary embolism which most often occurs before the phlebitis is clinically recognized. Pulmonary complications in this series were not of a serious nature. There were 3 cases of atelectasis and 1 of pneumonitis and these patients all recovered. Two patients developed hematomas in the wound which were of no consequence. Swelling of the testicle was noted in 3 instances, or in 1.4 per cent of the cases. Atrophy of the testicle was observed in a like number of cases. Wound infection occurred in 9 cases, or 4.4 per cent of the total number. This complication necessitated a longer stay in the hospital but was not found to be a causative factor in recurrence.

TABLE VII
COMPLICATIONS FOLLOWING OPERATION

		Percentage
Hematoma	2	0.9%
Swelling of the testicles	3	1.4%
Wound infection	9	4.4%
Testicular atrophy	3	1.4%
Phlebitis	3	1.4%
Atelectasis	3	1.4%
Embolism	2	0.9%
Pneumonitis	1	0.4%
Total	26	12.2%
Mortality	1	0.49%

Recurrence. The follow-up system was only effective in tracing 101, 49 per cent, of the 204 cases for a period of two to four years *(Table VIII)*. Among 43 traced operations for direct herniae, there were three known recurrences resulting in a recurrence rate of 6.9 per cent. The time of the recurrence was noted at three months, one year and twenty-one months respectively.

There were 58 traced cases of indirect herniae with 3 recurrences, a recurrence rate of 5.1 per cent. The time of recurrence was noted at eighteen months, two and one-half years and three years respectively. Thus it seems that the recurrence percentage is nearly equal for both the Bassini and Halsted methods of repair in this series of cases.

TABLE VIII
RECURRENCES

	Operations Traced	Recurred	Percentage	Time of Recurrence
Indirect	58	3	5.1%	1½, 2½, 3 years
Direct	43	3	6.9%	¼, 1, 1¾ years
	101	6	Av. 5.9%	

SUMMARY AND CONCLUSION

1. An analysis of 204 consecutive operations for inguinal hernia form the basis for this report.

2. In the follow-up study it was possible to trace only 101 cases, 49 per cent of the total number, for a period of two to four years.

3. The recurrence rate in the traced cases was 5.1 per cent for indirect herniae and 6.9 per cent for the direct type.

4. The Halsted or Ferguson operation gives satisfactory results in the repair of indirect herniae in young patients.

5. In direct herniae it is essential to repair the transversalis fascia.

6. Bassini's operation and the extra-aponeurotic transplantation of the cord operation, as originally advocated by Halsted, are the two most satisfactory methods of repairing direct herniae.

I wish to thank Dr. Roy D. McClure, Surgeon-in-Chief of the Henry Ford Hospital for the privilege of reporting these cases. I also wish to express my gratitude to Drs. L. S. Fallis and R. T. Boals of the above institution for their invaluable assistance in working up these cases.

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316 Exchange Bldg.

PANTOTHENIC ACID AND NUTRITION

Observations made by T. D. Spies, M. D., Cincinnati; S. R. Stanbery, M. A., Birmingham. Ala.; R. J. Williams, Ph. D., Austin, Texas; T. H. Jukes, Ph. D., and S. H. Babcock, Ph. D., Berkeley, Calif., indicate that pantothenic acid is essential to human nutrition and that its function is probably associated with that of riboflavin (vitamin B_2), they report in the Aug. 17 issue of *The Journal of the America Medical Association*. Pantothenic acid is a powerful growth-stimulating acid found in many plants and animals.

KIDNEY INFECTIONS AS A RESULT OF OBSTRUCTION

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What I may have to say in this short time, in consideration of infectious diseases of the upper urinary tract, will include only the following points: first, the origin of the infection; second, the condition of the urinary tract below the kidney which would be likely to result in obstruction to the outflow of urine from the kidney; and third, the progessive pathology in the kidney as result of obstruction and infection.

Obviously there are only three ways in which an actual infection can reach the kidney: the most common is by metastasis through the blood stream; the second is by extension up the ureter from infection lower down in the urinary tract; and the third, which is most rare, is by direct extension from adjacent organs. It is not necessary for me to enumerate the various organisms which may infect the kidney except to state that the most common of these are staphylococci of various kinds, streptococci, bacilli most often of the colon group, tubercle bacilli and very rarely a Neisserian infection which has extended up from the lower urinary tract.

The second of the two methods may be dismissed after a very few words. Organisms which extend up from the bladder in a retrograde manner to the upper urinary tract will do so because of some pathology in the lower urinary tract. It is not uncommon to see cases of long-standing urinary obstruction, produced by prostatic hypertrophy, carcinoma, or by urethral stricture which has existed over a long period of time, in which the ureters are dilated to a very large size, kidney pelves widely dilated, and calices greatly dilated or almost obliterated. Discovery of this condition is very often made in doing cystograms, when a medium is injected into the bladder while the patient is prone, at which time it will be found to have run up through the ureters and into the kidney pelves, simply by filling the bladder. It is not hard to see how an infection which really originated lower in the urinary tract might be carried up from the bladder to the kidneys by reflux of urine, especially when the patient is lying down. In this type of case the pathology actually exists in the lower urinary tract, most often the urethra, rather than in the kidney itself. I do not believe it is possible for regurgitation of urine to occur through a normal ureter with its valve-like closure of the ureteral meatus.

There have been reported a very few proved cases of ascending gonorrheal infection to the kidney pelves, producing a pyelitis of gonorrheal origin. It is very likely, however, that a great many of these cases which were formerly reported as a gonorrhea involving the kidney were in error. Authorities will not now accept a diagnosis of gonorrheal pyelitis unless the organisms have been cultured, and since this restriction has been placed on this diagnosis but few cases of gonorrheal pyelitis have been reported. Most patients in whom we suspect a gonorrheal infection of the kidney will, when a culture is made, be found to have a staphylococcic infection which exists in intra-cellular arrangement and apparently has taken on some gram negative characteristics similar to those of the gonococcus. I can truthfully say that I have never seen a proved gonorrheal infection of the kidney. The fact that I have seen a good many cases of Neisserian infection leads me to be certain that the incidence of gonorrheal pyelitis is extremely rare, and that when it does occur, it is in patients who have widely dilated ureters making regurgitation of urine possible.

The third method of entry of organisms into the upper urinary tract, namely, by direct extension from adjacent organs, is of far greater rarity than the method just discussed. Occasionally, however, we think that it does happen. A perinephritic abscess may rupture through the capsule of the kidney, possibly into a calix and thus into the kidney pelvis, or it may rupture directly into the kidney pelvis itself. This occurs in rare instances, even when a perinephritic abscess does exist and these abscesses themselves are uncommon. Occasionally an abscess of the liver may empty itself into the right kidney, and there has been reported one case of appendiceal abscess in a high retrocecal appendix which ruptured and

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drained itself into the right kidney. These cases are of sufficient rarity to be negligible.

Obviously the most common method of entry of organisms into the upper urinary tract is by metastasis through the blood stream. It may be well to mention here that not all organisms which reach the kidney through the blood stream do any appreciable damage. For example, undoubtedly you have seen cases of typhoid fever in which millions of colon-like bacilli were found to exist in the urine without the existence of pus. Also, you have probably isolated tubercle bacilli from the urine without urinary symptoms and without an appreciable amount of pus in the urine. This we speak of as a bacteruria, which means simply that these organisms are separated from the blood stream by the kidneys and are excreted through the urine without actually producing any pathologic changes anywhere in the urinary tract. It is not hard to prove that organisms do travel through the blood stream to the kidneys and that thus the kidneys are liable to infections which may exist elsewhere in the body, most commonly in the teeth, tonsils and intestinal tract.

Granting that organisms do come through the kidneys, let us see if we can determine what conditions could exist to cause them to produce pathologic changes. Let us suppose that we have some obstruction to the outflow of urine from one kidney, so that the urine is retarded or retained in the kidney itself. Organisms which reach a kidney of this kind would obviously have a better opportunity to grow because of lack of drainage and because of the kidney's lowered resistance due to lack of drainage. This fact will be the basis for what I have to say with regard to urinary tract infections, and I hope that I may convince you that kidney infections are infections plus obstruction and that really the obstruction is the thing of major significance.

Let us see what conditions might produce obstruction to the outflow of urine from the kidney. Possibly the most common is stricture of the ureter, though stones in the ureter are rather common, and malignancies in the ureter or close to the ureter are rare but do occur. Ptosis of the kidney often kinks the ureter in such way as to cause obstruction; abberrent blood vessels at times hook up the ureter in such way as to cause the urine to drain less freely. It is necessary also to include obstructions further down in the urinary tract because these obstructions may make themselves felt in the kidney pelves. Most common, of course, are prostatic obstructions, urethral strictures, stones in the bladder or urethra, or even a tight meatus. I believe that one of these various types of obstruction must exist if the kidney is seriously damaged by infection, whether we are able to demonstrate the obstruction or not; that if it were not for various obstructions to the outflow of urine, we, as urologists, would have very little to do except treating venereal diseases.

From an anatomical picture of the entire urinary tract, we can easily see that obstruction in the ureter will cause pathological conditions in one kidney only, and that we would have symptoms referable to one side only. This will account for many cases of one-side backache which are almost always kidney affairs. If obstruction exists lower down in the urinary tract, we would expect a bilateral condition to exist and the symptoms to be referable to both sides.

If our previous assertion is correct, that in order to get actual infection there must have been an obstruction, we must assume that the first symptom of which the patient would complain would be due to back pressure of urine, and that the back pressure would produce pain which would be in the region of the kidney, possibly extending down the ureter of the side, depending upon how low in the ureter the obstruction occurred. If the obstruction appeared suddenly, we would expect this symptom of pain to appear suddenly. This is most accurately exemplified by pain which we see in cases of ureteral stone. If we observe a case of stone in the ureter which does not pass for some time we will notice that these patients gradually cease to complain of the symptom of pain, even though the pelvis of the kidney and the ureter have become markedly dilated, so that after a period of time acute pain ceases to be a symptom. If obstruction, from whatever cause, advances over a long period of time, becoming more and more marked all along, it is very likely that there may be no attack of

acute pain, but that the process will be so gradual that the patient will notice only a dull backache confined to one side, if the obstruction is in the ureter. This happens most often in cases of slowly developing ureteral stricture. Any of these conditions, as you know, would produce dilation of the kidney pelvis and of the calices with some retention of urine in the kidney pelvis.

Suppose that organisms previously existing in the body come through the blood stream into a kidney of this kind. They would have an excellent opportunity to grow. Retention of infected urine would produce symptoms which can easily be imagined: severe pain and tenderness in the region of the kidney, very often a chill, high elevation of temperature with a good deal of lassitude and the patient's appearance of illness. Suppose that this condition of retention of infected urine in a dilated kidney pelvis advances over a long period of time, that is, it can easily be seen that the kidney itself would in time become markedly damaged by such a process, and that the longer the condition existed, the more damage we would expect of the kidney substance itself. It is very likely that such a patient, with a condition extending over a long period of time, would develop some immunity to this particular infection, that all symptoms would become lessened, that the incidence of pain would not be so severe, and probably sufficient immunity established to prevent a high elevation of temperature. I think this is a rather typical picture of the development of pyelitis or pyelonephrosis.

This will probably serve to give a general idea of just what happens in the development of kidney infections. When patients complain of vague pains in one side, and apparently most of these are women, with some tenderness and with an uninfected urine, differential diagnosis is difficult to make without accurate study. If a catheterized specimen of urine is infected and contains pus, we can suspect a kidney infection, although a diagnosis, even if infection is found, is at times confusing.

Several things may be confused with kidney pathology, excluding cases which are so glaring as to make diagnosis certain. For example, the appendix, particularly the high retrocecal kind, may produce symptoms which will closely simulate the condition which I have attempted to picture. More frequently it may be confused with diseases of the gallbladder; very often it is hard to separate from duodenal or gastric ulcer. The symptoms of abscess of the liver are difficult to separate from those of the right kidney.

There is probably no method by which we can as accurately picture these surrounding organs as we can delineate conditions of the kidney by accurate studies which we are able to make. By catheterizing the ureter of a suspected kidney, by microscopic examination of the urine, by actually measuring the capacity of the pelvis of the kidney in order to determine whether it is dilated, and by injection of a medium into the pelvis of the kidney in such way as to outline accurately the pelvis, calices and ureter on an x-ray plate, we can be practically certain of the actual condition of the kidney. We would be able to determine whether we were dealing with a pathological condition in the kidney itself.

There is very little for me to say about treatment of conditions of this kind. Obviously a great majority of the damage has been done by obstruction to the outflow of urine and this obstruction has made infection possible so that treatment should be directed to the obstruction. Also the source of infection should be cleared up, whether it be teeth, tonsils, or some other focus. Obstruction, of course, should be relieved. If it is due to stone, the stone must be removed; if due to ureteral stricture, dilation will usually prove satisfactory; if due to obstruction in the lower urinary tract, this should be remedied.

In comparatively few instances the process may have advanced to the point where the kidney is destroyed. Of course, if this is true, the kidney must be removed.

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VENEREAL DISEASE CONTROL

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The etiology of all venereal infections is known, also the prevention is not only known but is very simple. No one has ever been known to grow the spirocheta pallida in any other media than human blood serum. Therefore, because it is easily killed, very simple methods of cleansing and sterilizing will prevent infection. The following is one of the simplest methods, yet very effective: scrub with green soap and apply 33 per cent calomel ointment. Let this stay on for an hour or more.

The gonococcus has a wider field of living, but is very easily killed if attacked in the open, before it becomes imbedded in the tissue. The following will be sufficient: 10 per cent argyrol solution injected within two hours after exposure and held for five minutes. The female will require a thorough washing with green soap and a hot douche of bichloride of mercury, 1:2000, and an injection into the urethra of 10 per cent argyrol solution. The vagina, due to its acid reaction, is not often infected.

In 1917 and 1918 approximately four million men were drafted into the army. A few cases of gonorrhea appeared at inspection. Simple prophylactic methods were enforced but there was no legal restraint nor penalty on intercourse, other than compulsory prophylactic treatment. With so simple a treatment for prevention, isn't it absurd of us as physicians to stand idly by and see our boys and girls ruin themselves, because of ignorance as they battle with the problems of sex?

To the office of each of you has many times come a boy or girl with the story of injured morals and remorse, and worse, with a contracted disease, which may follow through life and even reach to future generations. This boy or girl should be taught the danger of infection, and the prevention of infection, because they are so simple.

Jean Ferrel in 1580 proved that infection would not pass through unbroken skin. He traced the course of disease from chancre to eruption. This simple knowledge and enforced prophylactic treatment will reduce suicide, divorce, invalidism, idiocy, and the cost to the government will be reduced by millions. In return it will repay in beauty, health and happiness. It is easier to prevent the disease than to cure it. It will cost but two dollars to prevent a case of syphilis, but it will cost a hundred or more dollars to cure it.

Down through the centuries physicians and scientists had been striving to prove that syphilis and gonorrhea were not the same disease. Balfour and Bell proved this by their experiments. John Hunter did not agree with his forerunners, and to prove his idea he inoculated himself with the pus from a patient with gonorrhea. By chance he selected a patient who had syphilis also, and so John Hunter developed syphilis, seemingly proving his theory, and for a time causing confusion in the chain of knowledge. Finally, in 1879, Neisser isolated the gonococcus and ten years later Ducrey found the bacillus of chancroid. In 1905 Schaudinn produced the spirocheta, and in 1907 Wassermann announced his test, which is based on the discoveries of Bordet and Benou. In 1910 Paul von Erlich appeared on the stage and announced that he had a new weapon with which to fight syphilis,—dioxido-diamido-dihydro-areseno-benzol.

A shot or two and a cure. 606, Salvarsan. What a relief to a syphilis sick world!

The drug was expensive and had to be mixed and given by trained physicians. Rockefeller Institute gave a helping hand. Here we find ourselves in 1939 and 1940 with scientific knowledge including etiology, mode of transmission, symptomatology, tests, and treatment. Yet the disease is on the increase, with 450,000 new cases yearly. Why should syphilis increase? If as much were known about cancer, it would be eradicated by the end of 1940.

Factors which contribute toward this increase are:

1. Inadequate treatment and camouflage of disease.
2. Loose morals of men and women.
3. Effect of mixed races in population.

Inadequate treatment is worse perhaps than no treatment at all, as far as the general public is concerned. In many cases a few injec-

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tions of neoarsphenamine are given which will heal the primary sore or skin and mucous lesions. The patient through ignorance, lack of care, or because of cost, will not take more. To all outward appearances he is a normal, healthy person,—a most dangerous state of camouflage. In a few weeks the disease will be in an active state again and the patient ready to transmit it to his next sexual partner.

From a social standpoint, it would have been better to have let this case go untreated and the skin and other lesions become noticeable. He would soon become a scaly-skinned, sorethroated, repulsive person, whom every one would avoid. His very repulsiveness would be a protection to the public.

There is nothing more important than to have a thorough understanding with your patient and to treat him only on condition that he is to follow the treatment to a cure. Otherwise, refuse treatment entirely.

Is it unfair to the present living generation, to say that they are more immoral than their forefathers? I believe poverty, machinery, moving pictures, cheap literature, apparent abortion rackets, easy divorce, etc. are having a tendency to lower our high standard of living. Poverty brings the poor girl from her usually well protected home, to work in the cafe, beer saloons and jook joints. If she is not of sterling and strong character, she is soon in the hands of the ill-mannered, infected, half treated, social nuisance of a man and finds herself infected. Young women of today go about unchaperoned, striving to imitate some "movie star" or her act of loving, dancing semi-nude, long before her age endows her with strength of character sufficient for restraint. Shining movie stars are the present day heroes rather than Columbus, Gladstone, Washington, Lincoln, Franklin, Webster or others of high character and achievement.

Literature and radio jokes are vulgar and suggestive. One glance at the news stand is sufficient. There you see pictures of women worse than nude, because of their suggestive positions. Stories are told of boys and girls who have made grave mistakes in life, yet their former sweethearts come forward and excuses are made and accepted, to suit the villain.

A large percentage of the negro population is infected. The negro transmits the disease readily and takes treatment carelessly. Many are of easy virtue and low morals.

SUMMARY AND SUGGESTIONS

1. Prevention, diagnosis and treatment of syphilis are scientific measures.

2. The medical profession holds in its possession scientific weapons which will prevent, cure and control the spread of syphilis, but does not have the power to control the public. This control must be given him by law.

3. A compulsory venereal disease card system should be law, rigidly enforced and honestly applied. Each child as well as older people should have a card history showing whether he has had the infection together with such information as type of disease, date contracted, treatment, whether cured or uncured. The state of the disease should be shown quarterly on this card after infection of patient and any physician giving a false report should be subject to having his license revoked. Any person evading examination and treatment should be subject to imprisonment until treated. No foreigner with a venereal disease history should be admitted into our country.

Some of you will raise your voices in horror at this idea, saying it will bring shame to light, but I contend you are wrong. No true gentlemen or lady will wish to impair or endanger the life or health of another person, simply for his or her momentary pleasure. The worthwhile type will gladly cooperate. Those who would evade the law deserve no respect. Therefore, they should be tagged and forced out into the open, just as they were before the day of salvarsan with their bald heads, their eyelashes gone, their scaly skin, mucous patches, and foul breath. It will cost no more to enforce such a law than it will to treat constantly the millions becoming infected.

If I can by these few words bring about a move to such an end my efforts will not have been in vain, and I will gladly give to my country the balance of life to protect our sons and daughters from such a loathsome disease, which they are prone to encounter, living in a cosmopolitan nation.

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ANOTHER REASON FOR THE NEED OF A MEDICAL COORDINATOR

"The maintenance of the food supply of the army and of the civilian population of the country in a time of emergency is as important a question as any of the questions which may confront our leaders in times of rapid action and stirring events," *The Journal of the American Medical Association* for Aug. 17 says in an editorial on "Food and the War." It continues:

In World War I every foreign country early appointed a food commission to control this problem. Early in 1917 *The Journal* emphasized the advisability of appointing at once in this country an appropriate scientific body to advise on such questions. The experience of many a foreign country after the war showed how inefficient and futile had been some of the considerations given to these vital problems. In the Netherlands and Denmark people were deprived of important sources of vitamin A in order that butter might be sold to other countries. As a result, numerous children developed xerophthalmia (a disease of the eyeball) and similar conditions. In Germany the effects of malnutrition resulting from the blockade became apparent later in increased cases of tuberculosis among those who were children at the time of the war. Today German writers are emphasizing the necessity for control of nutrition as basic to the winning of any conflict.

It is no secret that problems of maintenance of the food supply are already serious in the warring countries. Indeed, Great Britain has begun a meatless ration for some of the days of the week, inclining largely toward a diet of eggs, milk and vegetables. In a recent communication a German writer points out that the German diet must depend considerably during the forthcoming months on bread and potatoes and that it is necessary under such circumstances that the bread be a whole grain bread. Recently British authorities have appointed a food commisson to control food in the British army and among the British people, and already it has been decided to prepare a bread fortified with vitamin B_1 and calcium and to offer this for sale at a price similar to that for white bread. Moreover, British authorities have been urging cooperation of the Ministry of Food with the Ministries of Health and Agriculture to develop a national policy for control of the food supply.

In World War I the Surgeon General of the army early in the mobilization of the drafted army took steps leading toward the formation of a division in his office charged with the duty of advising on all questions relating to the nutrition of the soldier. The importance of nutrition was recognized early, yet the Quartermaster General was opposed to the establishment of nutrition officers in camp and it required six months before the Secretary of War authorized a food division for the army. The situation which confronts us today indicates the need for prompt action with regard to food and nutrition as a part of our current efforts toward preparedness. The National Research Council has a subcommittee on nutrition which is working on the problem of emergency and standard rations for the armed forces. The question of food for the soldier is still primarily in the division of the Quartermaster's office, but the Surgeon General of the army is equally concerned with the question of feeding the invalid soldier and with the feeding of troops for the prevention of illness. It is understood that two different divisions of the Advisory Commission on National Defense have set up subcoordinators who will be concerned with the problems of food. One of these divisions is that concerned with agriculture, the other that concerned with the consumer. There does not seem to be any evidence that any effort has been made to coordinate in any manner the work of these different advisory bodies, nor is it apparent from the evidence thus far available that modern dietetics and leading authorities in the field have been called into service.

The fundamental importance of good nutrition not only for those engaged in military services but for the population as a whole as the source of military units needs no argument in its behalf. What is needed is suitable coordination in Washington of all the various bodies that will be concerned with the nutrition of the nation. Such coordination can be brought about properly only by adequate representation of medicine, which includes scientific nutrition, in the Advisory Commission on National Defense.

MEDICAL PREPAREDNESS QUESTIONNAIRE RETURNED BY ALMOST 80,000

"Almost 180,000 questionnaires for the submission of personal information to be associated with any mobilization of the medical profession that may be required have now been put in the mails and, as we go to press, almost 80,000 of these have been returned," *The Journal of the American Medical Association* for Aug. 17 announces in its Medical Preparedness Section.

It is interesting to observe the varying percentages of physicians in various states who have replied. Nebraska leads all other states with more than 71 per cent, whereas New Mexico, Mississippi and Tennessee have made the smallest return.

The Journal says that the record of returns on the questionnaires will be listed from week to week as it is highly important that there be a card in the files of the Committee on Medical Preparedness of the American Medical Association for every physician in the United States regardless of his ability to render military service.

BIRTHS AND MARRIAGES

BIRTHS

Dr. and Mrs. H. S. Howell of Lake City announce the birth of a son, Harry Slade, Jr., on August 22, 1940.

* * *

Dr. and Mrs. Carlos P. Lamar of Miami announce the birth of a son, Carlos Patrick, on August 13, 1940.

MARRIAGES

Dr. Lauren M. Sompayrac and Miss Lois Sypert Cleveland of Jacksonville were married at Jacksonville Beach on August 30. Dr. Sompayrac is secretary of the Duval County Medical Society.

STATE NEWS ITEMS

Dr. W. M. Rowlett of Tampa returned the middle of September, after spending a month in New York and Boston, vacationing and visiting clinics.

* * *

Dr. C. McK. Tyre of Eustis spent three weeks during August attending clinics at Free Hospital, Brookline, Mass.

Dr. William E. Ross of Jacksonville spent three weeks the early part of September visiting clinics in New York and Boston.

* * *

Dr. J. C. Pate of Tampa returned recently from a trip north, which included visiting the Mayo Clinic.

* * *

Dr. M. M. Hannum of Eustis was guest speaker at the local Rotary Club on July 26 and at the evening meeting of the Lions' Club on July 30. Dr. Hannum's theme was the relationship of the Lake County Medical Center to the people of the county.

* * *

Dr. Waldo Horton of Winter Haven has returned from Boston where he did special work in dermatology and syphilology at the Massachusetts General Hospital and at two other clinics.

WANTED: E. E. N. T. connection with an established physician. Applicant is 31 years old, married, gentile, Southerner; from Southern medical school. Has had three years approved Eastern training in E. E. N. T. Licensed in Florida. Available in about three months. Address E. E. N. T., care Florida Medical Journal, Box 1018, Jacksonville.

COMPONENT COUNTY SOCIETIES

Pinellas

Col. Neil E. Funk (M.D.) was principal speaker at the August 2 meeting of the Pinellas County Medical Society at which members of the Army and Navy Club and the St. Petersburg Dental Society were guests. Dr. Funk's subject was "Medical Service with the Triangle (blitzkrieg) Division."

At the second meeting of the month, held on the evening of August 16, Dr. H. M. Rogers discussed "Treatment of Bronchial Asthma."

* * *

St. Johns

The St. Johns County Medical Society has gone "over the top," with 100 per cent of its dues paid for the current year. The officers of this society are: Dr. Donald T. Rankin, president; Dr. A. C. Walkup, vice president; Dr. V. A. Lockwood, secretary, and Dr. Reddin Britt, treasurer

DISTRICT MEDICAL MEETINGS: *Daytona Beach, Thursday, Oct. 3; Lake City, Friday, Oct. 4; Pensacola, Saturday, Oct. 5.*

ABSTRACT DEPARTMENT

Members of the Florida Medical Association who have had articles published in out-of-state medical journals are requested to forward such journals or reprints to Box 1018, Jacksonville, for abstracting in this department.

Massive Dilatation of the Common Bile Duct: Presentation of a Case with Report of Autopsy, JELKS, EDWARD, Jacksonville, *South. Surgeon* 9: 187-192 (March), 1940.

The correct diagnosis of massive dilatation of the common bile duct is rarely made before operation. In most of the cases symptoms develop before the patient is ten years old. Very few cases occur after twenty-five years. A total of about one hundred have been reported in the literature.

The usual symptoms are recurrent attacks of jaundice, pain in the upper portion of the abdomen and a palpable mass occurring during childhood or early adolescence. The condition occurs three times as often in females as in males. Most authors reporting cases consider the cystic dilation of the common duct as a congenital anomaly. From the standpoint of treatment, an anastomosis to establish as early as possible an adequate communication between the biliary tract and the intestine is most desirable. To prevent infection, excision of the cyst when possible by reducing stasis of bile is also done. A case is reported of a white girl, aged two, who had been normal until six months previously when jaundice appeared. At operation a large cyst three inches in diameter and five inches long was disclosed. She died soon after operation. A complete autopsy is appended.

Bursitis About the Shoulder, WEILAND, ARTHUR H., and BURBACHER, CHARLES R., Coral Gables, *South Surgeon* 9: 26-33 (Jan.), 1940.

This is an excellent paper dealing with a very common affection of the shoulder joint. It should be thoroughly studied for its complete description of the anatomy of the shoulder joint, and for the clear exposition of what constitutes the shoulder bursa.

Commonly, the bursitis comes to the surgeon in the chronic stage, for in the acute cases home remedies are first tried. In the chronic case, and often in the acute, there are deposits of lime in the bursa. These lime salts are usually deposited in the tendons about the shoulder and subsequently rupture into the bursa.

The etiology and pathogenesis are uncertain. Many theories have been advanced but all fall short of explaining the changes found. All agree that the deposit of calcium in the tendon is the beginning. Not infrequently the first pain is experienced after a twist or a blow, but this does not explain the presence of the deposit in the tendon, or why all similar twists or blows do not cause bursitis.

Treatment is usually surgical and subject to variations which depend upon the presence or absence of calcium and the preference of the operator.

BOOKS RECEIVED

Acknowledgment of books received will be made in this column and this will be deemed by us a full compensation to those sending them. A selection will be made for review, as expedient.

A DOCTOR'S HOLIDAY IN IRAN. By ROSALIE SLAUGHTER MORTON, M. D. Foreword by Hugh S. Cumming, Retired Surgeon General, U. S. A. A few years ago, Doctor Morton of Winter Park, Florida, concluded her autobiography, *A Woman Surgeon*, with these words: "I am going to Persia, or Iran as it is now called, to observe the amazing social changes there; electrifying modernity alongside age old traditions; people living next to one another illustrating every significant change during the past two thousand years. I am anxious to meet Mohammedan women and see how they, with the help of progressive men, are making a new concept of life." Doctor Morton went to Iran and returned with an amazing report of what she found there. This report she has put into a skillfully written, forceful narrative—an illuminating study of this embodiment of the new spirit that has risen in the Near and Middle East, *A Doctor's Holiday in Iran*. Cloth, illustrated, price, $3.00. New York: Funk & Wagnalls Co., 1940.

* * *

GRADUATE MEDICAL EDUCATION. By the Commission on Graduate Medical Education. This Commission was organized on December 4, 1937, in pursuance of a resolution adopted by the Advisory Board for Medical Specialties earlier in the same year. The chairman of the Commission states: "It was understood that the Commission would concern itself primarily with those problems which are common to all the specialty boards and organizations dealing with the different aspects of graduate medicine and would not attempt to accredit or evaluate facilities or to perform other administrative functions now carried out by the American Medical Association, the American College of Surgeons, the Association of American Medical Colleges and other administrative agencies." The Commission's activities were financed by the Rockefeller Foundation, the Carnegie Corporation, the Josiah Macy, Jr. Foundation, and smaller contributions from organizations and societies interested in this problem. This book comprises 6 chapters: Summary; The Internship; The Residency; Postgraduate Medical Education; The Specialty Boards; Postgraduate Medical Education in Great Britain; as well as appendixes giving pertinent information in table form and also data on "Some Existing Plans of Postgraduate Education." Cloth, pp. 304. Chicago: The University of Chicago Press, 1940.